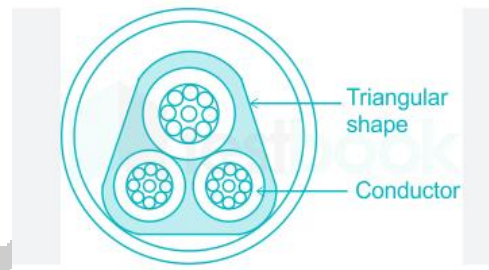


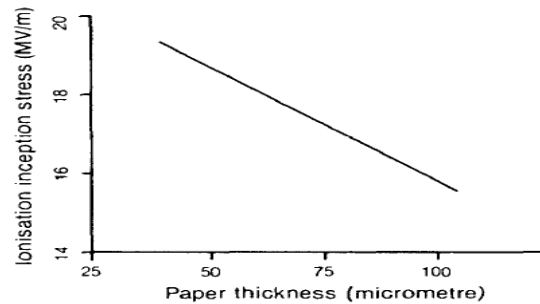
### 4.3 Gas Pressure Cables:



- There are two basic types of paper insulated gas pressure cables, one type employing gas within the dielectric to suppress ionization, and other type applying gas pressure external to a diaphragm to maintain the dielectric under compression under all service conditions.
- Cable types which employ a gas pressure external to the diaphragm are the gas compression cables and the high pressure gas-filled (HPGF) pipe type cable.

#### Internal Gas Pressure Cables:

- In this type of cable the insulation is saturated with nitrogen gas under a nominal pressure of 14 bar, which suppresses discharges which may otherwise have occurred in any cavities within the insulation.
  - i) Mass impregnation of the dried paper insulation with a viscous impregnant
  - ii) The application of paper tapes pre-impregnated with a petroleum jelly type of compound
- The early designs of mass-impregnated cable were known as the impregnated pressure (IP) cable and the first commercial installation
- Problems were encountered as a result of gas absorption by the impregnating compound, which caused frothing when the cable was being degassed, sometimes causing a blockage in the gas pipes or in the annulus below the metal sheath.
- Because of these problems and the improvements made in the self contained fluid-filled cable, commercial applications ceased at the end of the early
- The application of the pre-impregnated paper tapes follows standard dry paper lapping techniques, but as the core does not need to be dried and impregnated after the insulating process, the papers are dimensionally stable and the original lapping tensions



### External Gas Pressure Cables:

- The gas compression cable 6 is designed to facilitate the use of high electrical stresses by maintaining the dielectric in the fully impregnated state under all service conditions by the application of gas pressure external to a diaphragm sheath to prevent void formation within the dielectric.
- It was first introduced as a self-contained cable, the gas pressure being applied between a diaphragm lead sheath applied directly over the cable and an outer reinforced gas retaining lead sheath.
- Oval shaped stranded conductors are used for single cores.
- The conductor is usually screened with carbon loaded paper tapes and insulated with paper tapes and the core is screened with metallised paper or non-ferrous metal tapes.
- The single-core or 3-core cable is dried and impregnated in a conventional cable vessel, the impregnant being a viscous compound.

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